community-onset infections, in order to guide clinicians to select appropriate empirical antibiotics.
Material and methods: A retrospective study was performed at medical wards of a district hospital at southern Taiwan between July 2009 and June 2011. Patients were included if they were more than 18 year-old, admitted via the emergent department, and their blood, sputum or urine culture revealed the growth of *E. coli*, *K. pneumoniae*, or *P. mirabilis*. From each patient only the first isolate from the infection site was included. Antimicrobial susceptibility was determined by the disc diffusion method.
Results: Overall 827 patients were included, and 354 (42.8%) came from the community and 473 (57.2%) were referred from nursing home. Of the isolates acquired in nursing home, 45.5% (215/473) harbored ESBL. In contrast, 20.6% (73/354) isolates acquired in the community exhibited the ESBL production phenotype ($P<0.001$). Of the isolates obtained from blood, urine, or sputum, 28.2% (37/131), 36.0% (208/578), or 36.4% (43/118) harbored ESBL, respectively, whereas 41% (211) of 515 *E. coli* isolates, 34.3% (72) of 210 *K. pneumoniae*, and 4.9% (5) of 102 *P. mirabilis* had ESBL. In general, the isolates from nursing home or those with ESBL had lower antimicrobial susceptibility rates than those from the community or those without ESBL production. Only amikacin, piperacillin/tazobactam, ertapenem, and imipenem/meropenem were active against >90% *Enterobacteriaceae* isolates, irrespective of ESBL production.
Conclusion: ESBL production was common among clinical *Enterobacteriaceae* isolates, esp. *E. oli* or those isolated from nursing home residents.

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PREVENTION OF CATHETER ASSOCIATED URINARY TRACT INFECTION IN A VIETNAMESE HOSPITAL

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Purpose: Catheter associated urinary tract infection (CAUTI) is one of the most common hospital acquired infections. There are few data describing CAUTI rates in developing countries. We conducted a study to evaluate the incidence of CAUTI in our setting and to determine the effect of implementing a multidisciplinary prevention bundle on CAUTI incidence.
Methods: A prospective before and after intervention study was conducted from September 2012 to April 2013 at Hung Vuong hospital, an Obstetrics and Gynaecology Hospital in Ho Chi Minh City, Vietnam. We enrolled women who had urinary catheters inserted during their admission. From October 2012 to March 2013, a multidisciplinary prevention bundle including guideline development, distribution of sterile catheter insertion packs, education, reminders, audit and feedback was implemented. Data regarding infections, catheter-days and compliance with aseptic technique were collected in the pre-intervention (September 2012) and post-intervention (April 2013) periods.
Results: During the pre-intervention period, 2,069 women were enrolled, with 95.1 % of catheters being inserted at the time of surgery. After the intervention, 1,988 women were enrolled, with 96.8% of catheters inserted during surgery. The catheter-utilisation ratios before and after the intervention were 5.4 and 5.1, respectively ($p= 0.67$). There was a decrease in symptomatic CAUTI from 2.1% (95%CI 1.5-2.7%) to 1.4% (95% CI 0.8-1.9%), ($p=0.08$). There was significant improvement in knowledge, behaviour and practice of aseptic technique among nurses/midwives post-intervention.
Conclusions: Although the incidence of catheter associated urinary tract infection was relatively low, catheter use in our institution is very high. The prevention bundle improved aseptic insertion of catheters and was associated with a reduction in infection. Future interventions could focus on decreasing unnecessary catheter use.

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IMPROVE THE UTILITY RATE OF SAFETY NEEDLES FOR NURSES

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Purpose: The proportion of using safety needles in our high-risk units only accounts for 56.2%, including using intravenous catheter, infusion sets, Port-A safety needles, etc. Therefore, the aim of the study is to improve the utility rate of safety needles.
Methods: Firstly, we use on-the-spot inspection to confirm the usage condition of safety needles. Secondly, we will try to understand the reasons why they don't use safety needles via conversation. The reasons we found are as follows: the purpose of promotion is not clear, the application way is not clear for the units, nurses are not familiar with the using way of safety needles, the mechanism of safety needles cannot meet the clinical use and lack of both of checking and feedback mechanisms. The solutions we suggest are as follows: holding the education and training programs of safety needles of OSCE, establishing the nursing consulting team, planning the drawing procedure of safety needles, planning the checking mechanism.
Results: The original utility rate of safety intravenous catheter, infusion sets, Port-A safety needle are 86.5%, 30%, 86.7%, and now they are all upgraded to 100% after these improvement. In addition, the usage rates of safety needles in the whole nursing department are all improved, including intravenous catheters reach to 98%, infusion sets reach to 99.5%, and Port-A needles reach to 98.4%.
Conclusions: In this study, by establishing the nursing consulting team and seed instructors, they can help units to identify problems and to guide immediately with feedback, and to overcome barriers during promotion. In the future, we will continue to promote different kinds of safety needles.

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POST-CRANIOTOMY MENINGITIS CAUSED BY *KLEBSIELLA PNEUMONIAE* IN ADULT PATIENTS: VIRULENCE CHARACTERISTICS AND ANTIBIOTIC RESISTANCE

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Purpose: *Klebsiella pneumoniae* (KP) is known to cause primary liver abscesses, which may metastasis to brain and meninges. Notably, KP is capable of causing nosocomial post-craniotomy meningitis. The rmpA gene and hypermucoviscosity (HV) phenotype are known KP virulence determinants. Yet, the virulence and antibiotic resistance profile of KP that cause post-craniotomy meningitis are not elucidated. We compare the difference in KP isolates between primary and post-craniotomy meningitis strains.
Material and methods: Patients with liver abscess were excluded. 14 KP meningitis isolates were studied, including primary meningitis ($n = 8$) and post-craniotomy meningitis ($n = 6$). HV phenotype was defined as a viscous string of > 5 mm of the colony on blood agar plate. Genomic DNA was screened for the c-*rmpA* gene and the virulent K capsule serotype specific genes (K1, K2, K5, K20, K54, and K57). The plasmid DNA was screened for *rmpA and rmpA2* genes by PCR and DNA sequencing. Genomic relatedness was compared by pulsotype of pulse-field gel electrophoresis.
Results: All 8 primary meningitis strains were positive for the HV phenotype and *rmpA*; 7 had *rmpA2*, but none had c-*rmpA*. The K capsule genotypes were 4 for K2 and one each for K5, K20, K54 and K57. All 6 post-craniotomy meningitis isolates were negative for HV, *rmpA, rmpA2* and c-*rmpA*. All the K capsule genotypes were unidentified. All 14 isolates were different in pulsotype, indicating no linkage between these strains. Extended-spectrum β-lactamse phenotype was found in all 6 post-craniotomy meningitis KP isolates, but was negative in all 8 primary meningitis KP strains.
Conclusions: Post-craniotomy meningitis KP strains were highly resistant to antibiotics but were less virulent in the absence of virulent factors of HV phenotype, K capsule types, *rmpA* and *rmpA*2 genes.

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ANTIFUNGAL SUSCEPTIBILITY OF *CANDIDA* SPECIES ISOLATED FROM PATIENTS WITH CANDIDEMIA IN SOUTHERN TAIWAN, 2007—2012: THE IMPACT OF REVISED CLSI BREAKPOINTS

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Purpose: There exist geographical differences and changes over time in *Candida* species distribution and susceptibility tests. In December 2012,